



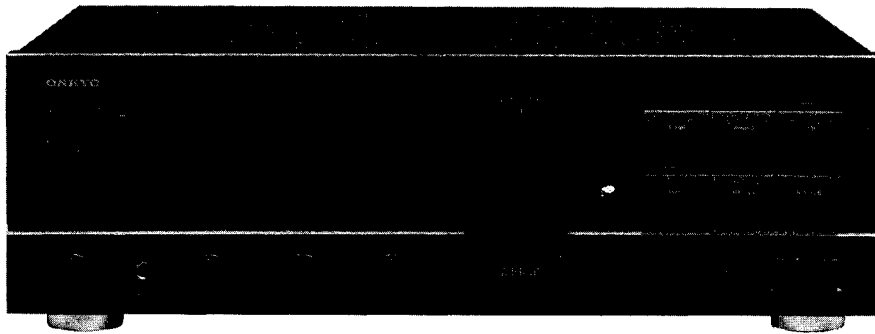
ONKY -00732

SERIAL No. 3325

A-8620

ONKYO® SERVICE MANUAL

Integrated Stereo Amplifier MODEL A-8620



Silver and Black models

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK  ON THE SCHEMATIC DIAGRAM AND IN THE PARTS LIST ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE THESE COMPONENTS WITH ONKYO PARTS WHOSE PARTS NUMBERS APPEAR AS SHOWN IN THIS MANUAL.

MAKE LEAKAGE-CURRENT OR RESISTANCE MEASUREMENTS TO DETERMINE THAT EXPOSED PARTS ARE ACCEPTABLY INSULATED FROM THE SUPPLY CIRCUIT BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

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SPECIFICATIONS

Power Output:	40 watts per channel, min RMS, at 8 ohms, both channels driven from 20 Hz to 20 kHz, with no more than 0.08% THD. 2 × 65 watts at 4 ohms, 1 kHz (DIN) 2 × 50 watts at 8 ohms, 1 kHz (DIN)	
Total Harmonic Distortion:	0.08% at rated power	
IM Distortion:	0.08% at rated power	
Damping Factor:	40 at 8 ohms	
Frequency and Response:	15-30,000 Hz ±1 dB	
Input Sensitivity/Impedance:	Phono:	2.5 mV/50 kohms
	Tuner/CD/AUX, Video:	150 mV/50 kohms
	Source Direct:	150 mV/50 kohms
	Tape/Play:	150 mV/50 kohms
Output Sensitivity/Impedance:	Tape/Rec:	150 mV/3 kohms (phono)
Phono Overload:	150 mV RMS at 1 kHz, 0.08% THD (REC)	
Bass Control:	±10 dB at 100 Hz	
Treble Control:	±10 dB at 10,000 Hz	
Selective Tone Control:	—	
Signal to Noise Ratio (IHF-A):	Phono:	80 dB (5 mV input)
	Source Direct (CD):	102 dB

General

Power Supply:	AC 220V, 50 Hz
Dimensions (W × H × D):	435 × 143 × 287 mm 17-1/8" × 5-5/8" × 11-5/16"
Weight:	6.3 kg, 13.9 lbs.

Specifications and features are subject to change without notice.

PRECAUTIONS

1. Replacing the fuses

For continued protection against risk fire, replace only with same type and same rating fuse.

CIRCUIT NO.	PART NO.	DESCRIPTION
F902	252076 or 252076CC	3.15A-SE-EAK or 3.15A-SE-EAK Primary fuse

ADJUSTMENT PROCEDURES

Adjustments and Checking the Protection Circuitry

1. Preparations

- 1) Place the unit on the workbench. (There should be about 15 mm of space between the base plate of the unit and the work surface.)
- 2) Set up the unit as follows.
 - (1) No load
 - (2) No signal
 - (3) Volume turned all the way down
 - (4) Speaker switch OFF
 - (5) Power switch OFF

Note) Check the following points before making adjustments

- (1) The power switch should be OFF.
- (2) The interior of the unit should not be warm.

2. Idling current adjustment

- 1) Turn the power switch ON and allow the unit to warm up for about 10 minutes.
 - (1) Adjust R529 (R530) so that the voltage at test point VCT-ID on the NAAF-3547 circuit board is $7.5\text{mV} \pm 2.5\text{mV}$

3. Check of operation of protection circuitry

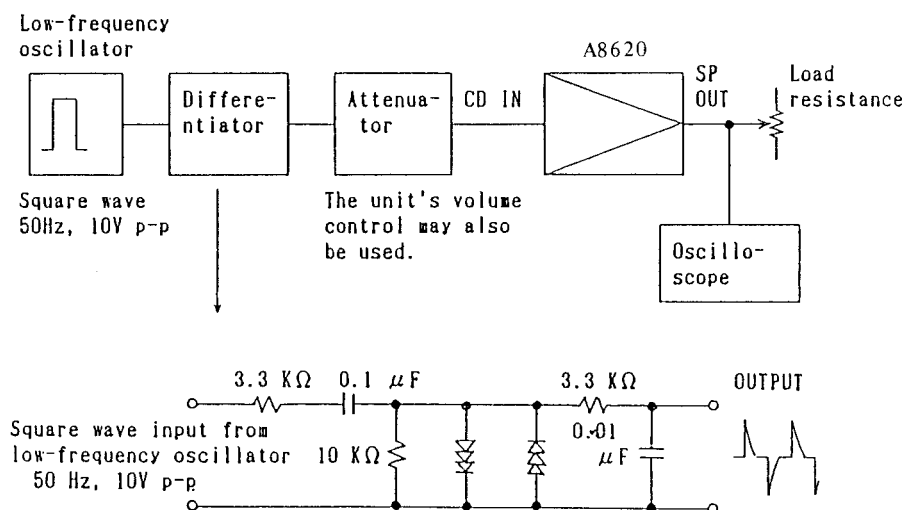
- 1) Check of operation of protection relay.
 - (1) Confirm that the relay turns ON approximately 5 seconds after the power switch is turned ON.
 - (2) The relay should turn OFF approximately 0.5 seconds after the power switch is turned OFF.
- 2) Check of DC detection
 - (1) Turn the power on with no load.
 - (2) After the speaker relay turns ON, apply DC +1.5V to the CD input terminals. Confirm that the relay turns OFF.
 - (3) Confirm that operation is the same as (2) above when an input of DC -1.5V is applied.

Note) Under no circumstances connect a load or short the speaker terminals when performing the above test.

3) Signal input from the circuit illustrated below with no load.

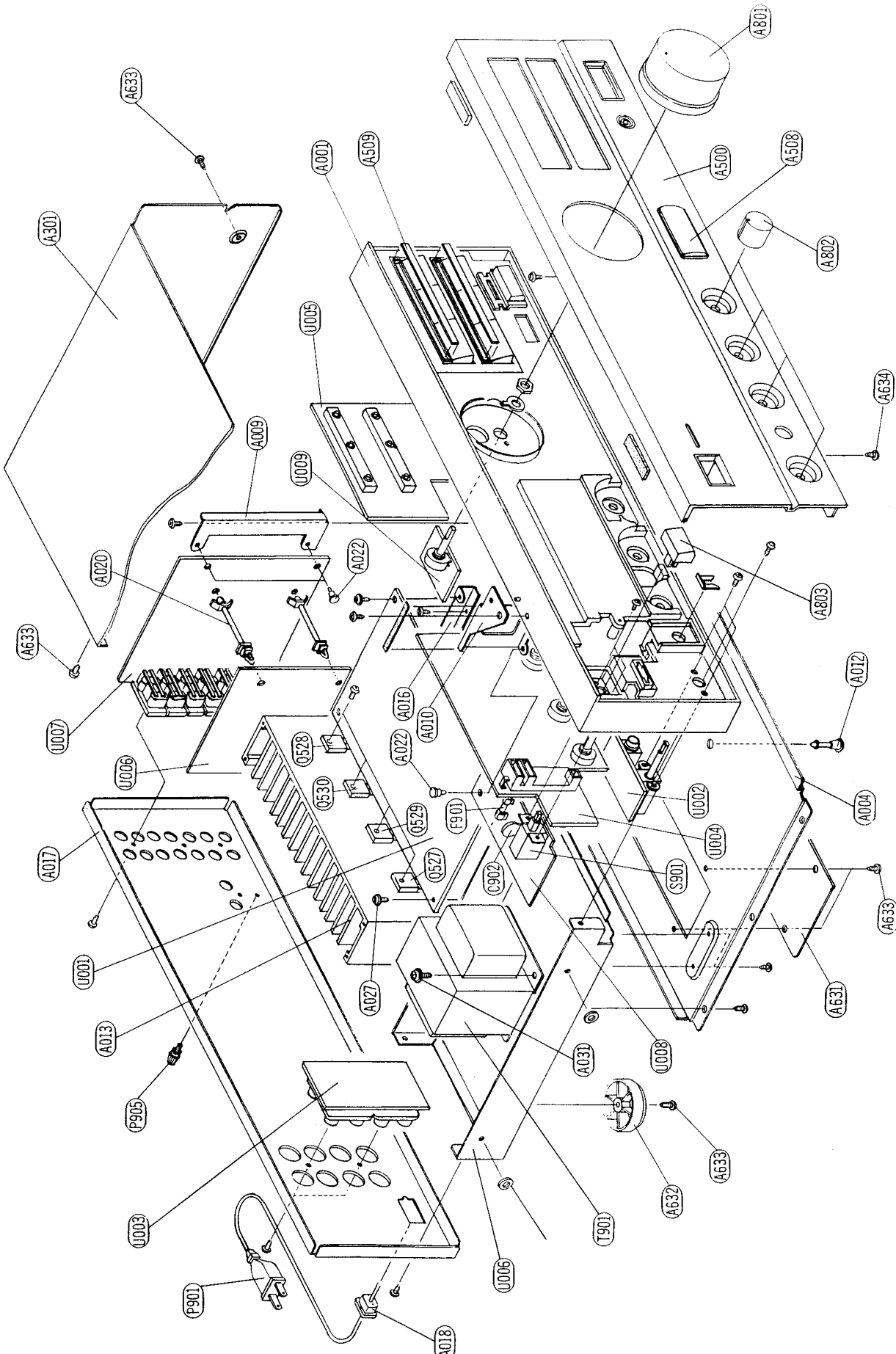
- (1) Confirm that the speaker relay does not turn OFF even when a 2 ohm load is connected when a peak value of 35V p-p is output.
- (2) Next, confirm that when a 1 ohm load is connected the speaker relay switches OFF and ON a couple of times and then stays OFF.

Note) The period before that relay stays OFF should not last for more than 10 second.
Relay OFF status can be canceled by switching the power OFF.



NOTE) Semi-fixed resistors enclosed in parentheses () are for the right channel.

CHASSIS-EXPLODED VIEW



PARTS LIST

REF. NO.	PART NO.	DESCRIPTION
A001	27110481B	FRONT ANGLE ASS'Y [BLACK]
A001	27110480C	FRONT ANGLE ASS'Y [SILVER]
A004	27100185A	CHASSIS
A006	27130573B	BRACKET (PT)
A009	27141329	BRACKET (SW)
A010	27141324	BRACKET (POW)
A013	27160238C	HEATSINK
A016	27141332	BRACKET (PC)
A017	27121242A	BACK PLATE
A018	27300750	BUSHING (CABLE)
A020	27190369	KGLS-22S, PC HOLDER
A021	27190511	KGLS-16R, PC HOLDER
A022	880009	NRP-345, REVET
A027	831130088	3TTW-8B, TAPPING SCREW
A031	830440089	4TTC+8CBC, TAPPING SCREW
A301	28184436	TOP COVER [BLACK]
A301	28184435	TOP COVER [SILVER]
A302	28140555	CUSHION
A303	28140729	CUSHION
A304	27270147	SPACER
A500	1A139121	FRONT PANEL [BLACK]
A500	1A142121	FRONT PANEL [SILVER]
(A502)	27267593	GUIDE (POW) [BLACK]
(A502)	27267592	GUIDE (POW) [SILVER]
(A503)	27267591	GUIDE (TONE) [BLACK]
(A503)	27267590	GUIDE (TONE) [SILVER]
(A504)	27267595	GUIDE (SD) [BLACK]
(A504)	27267594	GUIDE (SD) [SILVER]
(A505)	28198724	FAKET (OP)
(A506)	28198725	FAKET (SD)
A508	28135175	NAME PLATE [BLACK]
A508	28135174	NAME PLATE [SILVER]
A509	28191507	PLATE (SEL) [BLACK]
A509	28191515	PLATE (SEL) [SILVER]
A631	27170261	BOTTOM BOARD
A632	27175219	BOTTOM REG
A633	834430088	3TTS+8BBC, TAPPING SCREW
A634	833430080	3TTP+8PBC, TAPPING SCREW
A801	28323673	KNOB (VOL) [BLACK]
A801	28323672	KNOB (VOL) [SILVER]
A802	28323677A	KNOB (TONE) [BLACK]
A802	28323676A	KNOB (TONE) [SILVER]
A803	28323241-1	KNOB (POW) [BLACK]
A803	28323249-1	KNOB (POW) [SILVER]
Q527, Q528	2201783 or 2201784 or 2201786	2SC3854-O or 2SC3854-Y or 2SC3854-P, TRANSISTOR
Q529, Q530	2201773 or 2201774 or 2201776	2SA1490-O or 2SA1490-Y or 2SA1490-P, TRANSISTOR
T901	2300421	NPT-1031G, POWER TRANSFORMER
P901	253149	AS-CEE, POWER SUPPLY CABLE
P905	25060044	GROUND TERMINAL
S901	25035550	NPS-111-L512P, POWER SWITCH
C902	3500065A	0.01 μ F, AC400V/125V, CAPACITOR
F902	252074 or 252074CC	2A-SE-EAK or 2A-SE-EAK, FUSE

REF. NO.	PART NO.	DESCRIPTION
U001	1A139547-1A	NAAF-3547-1A, MAIN CIRCUIT PC BOARD ASS'Y
U002	1A139548-1	NASW-3548-1, SPEAKER SWITCH PC BOARD ASS'Y
U003	1A139549-1A	NAETC-3549-1A, SPEAKER TERMINAL PC BOARD ASS'Y
U004	1A139550-1A	NADG-3550-1A, SYSTEM CONTROL CIRCUIT PC BOARD ASS'Y
U005	1A139551-1	NASW-3551-1, KEY SWITCH PC BOARD ASS'Y
U006	1A139552-1A	NAETC-3552-1A, EQUALIZER CIRCUIT PC BOARD ASS'Y
U007	1A139553-1A	NAAF-3553-1A, SELECTOR SWITCH CIRCUIT PC BOARD ASS'Y
U008	1A139554-1A	NAPS-3554-1A, POWER SWITCH CIRCUIT PC BOARD ASS'Y
U009	1A139555-1	NAETC-3555-1, VOLUME CONTROL CIRCUIT PC BOARD ASS'Y

NOTE [BLACK]: ONLY BLACK MODEL
[SILVER]: ONLY SILVER MODEL

NOTE: NOTE: THE COMPONENTS IDENTIFIED BY
MARK  ARE CRITICAL FOR RISK OF FIRE AND
ELECTRIC SHOCK. REPLACE ONLY WITH
PARTS NUMBER SPECIFIED.

PRINTED CIRCUIT BOARD PARTS LIST

MAIN CIRCUIT PC BOARD (NAAF-3547-1A) PARTS LIST

CIRCUIT NO.	PART NO.	DESCRIPTION	CIRCUIT NO.	PART NO.	DESCRIPTION
Transistors			Resistors		
Q501, Q502	2212285 or	2SC2878-A or	R527, R528	442522704	27 Ω , 1/2W, Metal oxide film
	2212286	2SC2878-B	R529, R530	5210064	N06HR10KBD, Semi-fixed
Q503~Q506	2211455 or	2SA1015-GR or	R535, R536	442529104	91 Ω , 1/2W, Metal oxide film
	2210803	2SA733-P	R539, R540	442522714	270 Ω , 1/2W, Metal oxide film
Q507, Q508	2211371 or	2SC2259-O-001 or	R541~R544	442520224	2.2 Ω , 1/2W, Metal oxide film
	2211372	2SC2259-O-002	R545, R546	441620104	1 Ω , 1W, Metal oxide film
Q509, Q510	2211732 or	2SC1845-F or	R547~R550	4000063 or	0.47 Ω , 2W or
	2211733	2SC1845-E		4500009	0.47 Ω , 2W, Metal plate
Q511, Q512	2211255 or	2SC1815-GR or	R559, R560	442520824	8.2 Ω , 1/2W, Metal oxide film
	2210746	2SC945A-P	R564, R565	442520224	2.2 Ω , 1/2W, Metal oxide film
Q513, Q514	2211353 or	2SA949-O or	R658	441626214	620 Ω , 1W, Metal oxide film
	2211354	2SA949-Y	R912	441623314	330 Ω , 1W, Metal oxide film
Q515, Q516	2211633 or	2SC2229-O or	R915, R916, R917	441623314	330 Ω , 1W, Metal oxide film
	2211634	2SC2229-Y	R918	441724714	470 Ω , 2W, Metal oxide film
Q517, Q518	2211255 or	2SC1815-GR or	R920	442523324	3.3 K Ω , 1/2W, Metal oxide film
	2210746	2SC945A-P	R931	441621024	1.0 K Ω , 1W, Metal oxide film
Q523, Q524	2211653 or	2SC2235-O or	R932	442521024	1.0 K Ω , 1/2W, Metal oxide film
	2211654	2SC2235-Y			
Q525, Q526	2211643 or	2SA965-O or		Relay	
	2211644	2SA965-Y	RL501	25065134	NRL-2P5A-DC24V-07
Q531, Q532	2211732 or	2SC1845-F or		Jumper sockets	
	2211733	2SC1845-E	JL302a, JL903a	25050267	NSCT-3P95
Q652	2211792 or	2SA992-F or	JL902a	25050270	NSCT-6P98
	2211793	2SA992-E		Bracket	
Q653, Q654	2211732 or	2SC1845-F or		27141059	Ground
	2211733	2SC1845-E			
Q655	2211255 or	2SC1815-GR or			
	2212485	JC501-Q			
Q913	2201404 or	2SD1406-GR or			
	2201405	2SD1406-Y			
Diodes			SPEAKER SWITCH PC BOARD (NASW-3548-1) PARTS LIST		
D501, D502	4000120	KB265, Varistor	CIRCUIT NO.	PART NO.	DESCRIPTION
D652	223163	1SS133		Coils	
D911~D914	223897 or	P300DL or	L571, L572	231001	S-1.3B
	22380003	1N5402F		Resistors	
D917, D918	224151601 or	05AZ16X or	R571, R572	442520564	5.6 Ω , 1/2W, Metal oxide film
	224651601 or	HZ16EB1 or	R573, R574	441623914	390 Ω , 1W, Metal oxide film
	224451601	MTZ16A, Zener		Switch	
D919	224150623 or	05AZ6.2Z or	S571	25030290	NRSF-144-25SS
	224650623 or	HZ6.2EB3 or		Stereo jack	
	224450623	MTZ6.2C, Zener	P572	25045164	HLJ-4317-01-3020
D931, D932	223880 or	GP101N4003 or			
	223896	1N4003			
D933	224150502 or	05AZ5.1Y or			
	224650502 or	HZ5.1EB2 or			
	224450502	MTZ5.1B, Zener			
Capacitors			SPEAKER TERMINAL PC BOARD (NAETC-3549-1A) PARTS LIST		
C501, C502	354741009	10 μ F, 16V, Elect.	CIRCUIT NO.	PART NO.	DESCRIPTION
C503, C504	372121014	100 pF, 50V, Styrene		Terminal	
C505, C506, C653	354722219	220 μ F, 6.3V, Elect.	P571	25060134	NTM-8PDMN-063
C511, C512	354780229	2.2 μ F, 50V, Elect.			
C513, C514	372121024	1000 pF, 50V, Styrene			
C529, C530	371124734	0.047 μ F, 50V, Mylar			
C533, C534					
C535, C536	354781019	100 μ F, 50V, Elect.			
C652	354780479	4.7 μ F, 50V, Elect.			
C911, C912	35042075	6800 μ F, 50V, Elect.			
C913, C914	354761019	100 μ F, 35V, Elect.			
C919, C921	354742219	220 μ F, 16V, Elect.			
C922	354782219	220 μ F, 50V, Elect.			
C923	354741019	100 μ F, 16V, Elect.			
C925	354722219	220 μ F, 6.3V, Elect.			
C931	354741009	10 μ F, 16V, Elect.			
			SYSTEM CONTROL CIRCUIT PC BOARD (NADG-3550-1A) PARTS LIST		
			CIRCUIT NO.	PART NO.	DESCRIPTION
				ICs	
			Q301, Q321	22240050	μ PC4570C
			Q701	22240238 or	LC6520H-3956 or
				22240254	LC6520H-4030
				Transistors	
			Q703, Q704	2211255 or	2SC1815-GR or
				2212485	JC501-Q

PARTS LIST OF PACKING

SELECTOR SWITCH CIRCUIT PC BOARD (NAAF-3553-1A) PARTS LIST		
CIRCUIT NO.	PART NO.	DESCRIPTION
D711	Diodes	
	225137CG or	SEL2413ECG or
	225137DG or	SEL2413EDG or
	225137DY	SEL2413EDY, LED
D712	223163	1SS133
D714~D716		
X701	Osc. element	
	3010150	CST4.00MGW
C301, C302	Capacitors	
	354780229	2.2 μ F, 50V, Elect.
	354780339	3.3 μ F, 50V, Elect.
	354780339	3.3 μ F, 50V, Elect.
C305, C306	371122234	0.022 μ F, 50V, Elect.
C307, C308		
C325, C326		
C327, C328		
C331, C332		
C701	3000051	0.047 F, 5.5V, SUPER
C703	354780109	1.0 μ F, 50V, Elect.
C705	354741009	10 μ F, 16V, Elect.
R315	Resistors	
	5104228	N11RHC250KWT22Z, Variable
R321, (R322)	5104229	N14RHC100KWT22Z, Variable
R335, (R336)		
R701	49163473404	47 K Ω ×4, Network
	Holder	
	27190701A	(LED, OP)

KEY SWITCH PC BOARD (NASW-3551-1) PARTS LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
D704~D710	Diodes	
	225137CG or	SEL2413ECG or
	225137DG or	SEL2413EDG or
	225137DY	SEL2413EDY, LED
S701~S707	Switches	
	25035548	NPS-111-S510
	Holders	
	27190702A	(LED, SEL)
	27190697	(LED, ST)

EQUALIZER CIRCUIT PC BOARD (NAETC-3552-1A) PARTS LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
Q101, Q102	ICs	
	222570 or	NJM4560DX or
	22240191	NJM4565DD
C103, C104	Capacitors	
	372121814	180 pF, 50V, Styrene
	354741009	10 μ F, 16V, Elect.
	354721019	100 μ F, 6.3V, Elect.
	371126224	6200 pF, 50V, Mylar
	371121824	1800 pF, 50V, Mylar
	354721019	100 μ F, 6.3V, Elect.
	354742219	220 μ F, 16V, Elect.
	Terminal	
	25045211	NPJ-2PDBL91

CIRCUIT NO.	PART NO.	DESCRIPTION
Q201	ICs	
	22240079	LC7821
	22240025	LC4966
Q202	Transistors	
	2212285 or	2SC2878-A or
Q203, Q204	2212286	2SC2878-B
Q801, Q811	2211455 or	2SA1015-GR or
	2212495	JA101-Q
Q802, Q812	2211255 or	2SC1815-GR or
	2212485	JC501-Q
D801	Diodes	
	224150621 or	05AZ6.2X or
	224650621 or	HZ6.2EB1 or
	224450621	MTZ6.2A, Zener
C804	Capacitors	
	354780229	2.2 μ F, 50V, Elect.
	354780109	1 μ F, 50V, Elect.
	354744709	47 μ F, 16V, Elect.
C805, C811		
C806, C807		
P201	Terminals	
	25045213	NPJ-6PDBL-92
P202, P203	25045171	NPJ-4PDBL-65

POWER SWITCH CIRCUIT PC BOARD (NAPS-3554-1A) PARTS LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
C902	Capacitors	
	3500065A	0.01 μ F, AC400V/125V, IS
S901	Switch	
	25035550	NPS-111-L512P
	Terminal	
	25060092	NTM-1S33
F902a	Fuse holder	
	25050065	YSH4037

VOLUME CONTROL CIRCUIT PC BOARD (NAETC-3555-1) PARTS LIST

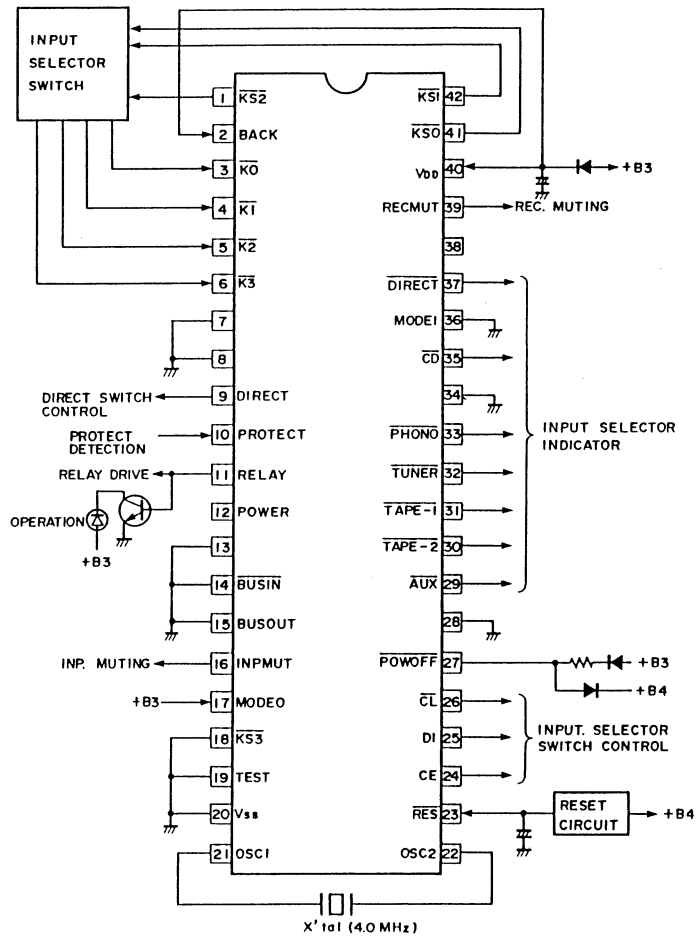
CIRCUIT NO.	PART NO.	DESCRIPTION
R351, (R352)	Resistors	
	5104250A	N16RGM50KA30F, Variable

REF. NO.	PART NO.	DESCRIPTION
A851	29051882	MASTER CARTON BOX [BLACK]
A851	29051881	MASTER CARTON BOX [SILVER]
A852	29091322B	PAD, LEFT
A853	29091323B	PAD, RIGHT
A855	261504	W = 30 mm, PAPER TAPE
A866	29100063	750 × 580mm, POLY-VINYL BAG
A867	282301	SEALING HOOK
A868	260012	W = 50 mm, DAMPLON TAPE
	29355133	CAUTION (DBP)
A900	ACCESSARY BAG ASS'Y	
	29341395	INSTRUCTION MANUAL
	29365020A	WARRANTY CARD
	29100006A	250 × 350, POLY-VINYL BAG
	29100094A	POLY-VINYL BAG (WARRANTY CARD)

NOTE [BLACK]: ONLY BLACK MODEL
[SILVER]: ONLY SILVER MODEL

IC BLOCK DIAGRAM

LC6520H-3956

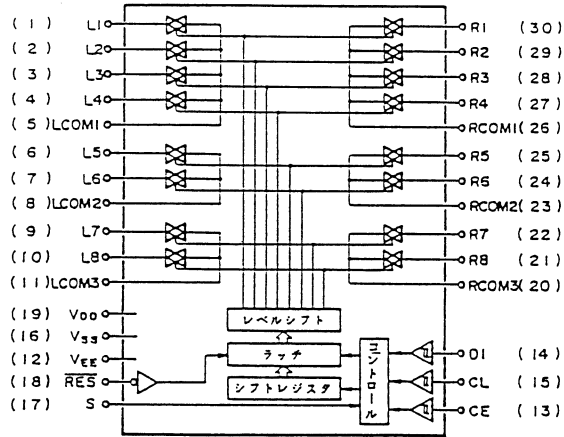


Pin No.	Pin name	Symbol	Function
1	PA2	KS2	Key scan output terminal.
2	PA3	BACK	Input terminal for initial settings. Fixed at "H".
3	PB0	K0	Key input terminals.
4	PB1	K1	
5	PB2	K2	
6	PB3	K3	
7	PC0	—	Fixed at "L".
8	PC1	—	Fixed at "L".
9	PC2	DIRECT	DIRECT switch on is "H".
10	PC3	PROTECT	Protect input terminal.
11	PD0	RELAY	Speaker relay control terminal. Switches to "H" 5 second after power is turned on. Immediately switches to "L" when POW OFF terminal switches from "H" to "L".
12	PD1	POWER	Open terminal.
13	PD2	—	Ground
14	PD3	BUS-IN	Ground
15	PE0	BUSOUT	Ground
16	PE1	INPUMT	Input selector muting output terminal.
17	PE2	MODE0	Fixed at "H". Initial setting when power is turned on.
18	PE3	KS3	Ground
19	TEST	TEST	Ground
20	V _{SS}	V _{SS}	Ground
21	OSC1	OSC1	Ceramic oscillator connector terminals (4 MHz).
22	OSC2	OSC2	

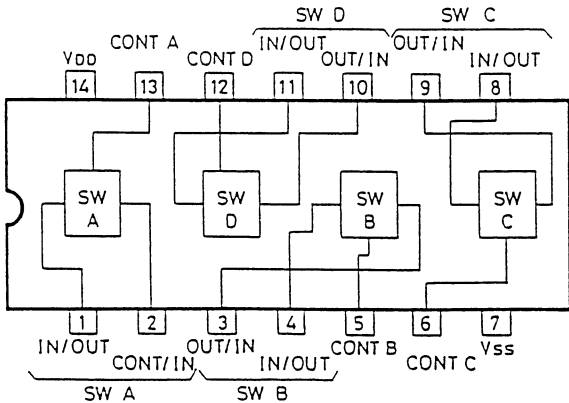
23	RES	RES	RESET input terminal.
24	PF0	CE	Chip-enable output terminal. Connected to analog switch CE terminal.
25	PF1	DI	Serial data output terminal. Connected to analog switch DI terminal.
26	PF2	CL	Serial data output terminal. Connected to analog switch CL terminal.
27	PF3	POWOFF	Power off sensor input terminal.
28	PG0	—	Ground
29	PG1	AUX	INPUT SELECTOR display output terminals. Input selector setting position is "L".
30	PG2	TAPE-2	
31	PG3	TAPE-1	
32	PI0	TUNER	
33	PI1	PHONO	
35	PI3	CD	
34	PI2	—	Ground
36	PJ0	MODE1	Power-on initial setting input terminal. Fixed at "L".
37	PJ1	DIRECT	Direct display output terminal.
38	PJ2	—	Open terminal.
39	PJ3	RECMUT	Muting control output terminal for REC. output.
40	V _{DD}	V _{DD}	Power supply terminal (+5V).
41	PA0	KS0	Key scan output terminals.
42	PA1	KS1	

- NOTE: 1. The settings of the TAPE-1 REC and PLAY keys are always the reverse of one another. When one is on the other is off.
2. The TAPE-2 REC and PLAY keys work that same way as those of TAPE-1.
3. The analog switch settings do not change when the direct switch is turned on or off.

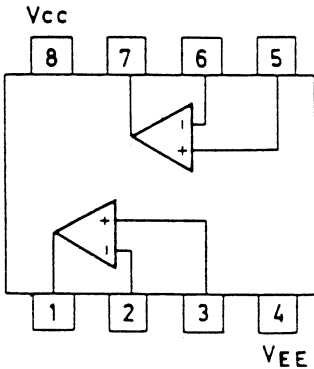
LC7821 (Analog switch)



LC4966 (Switch)

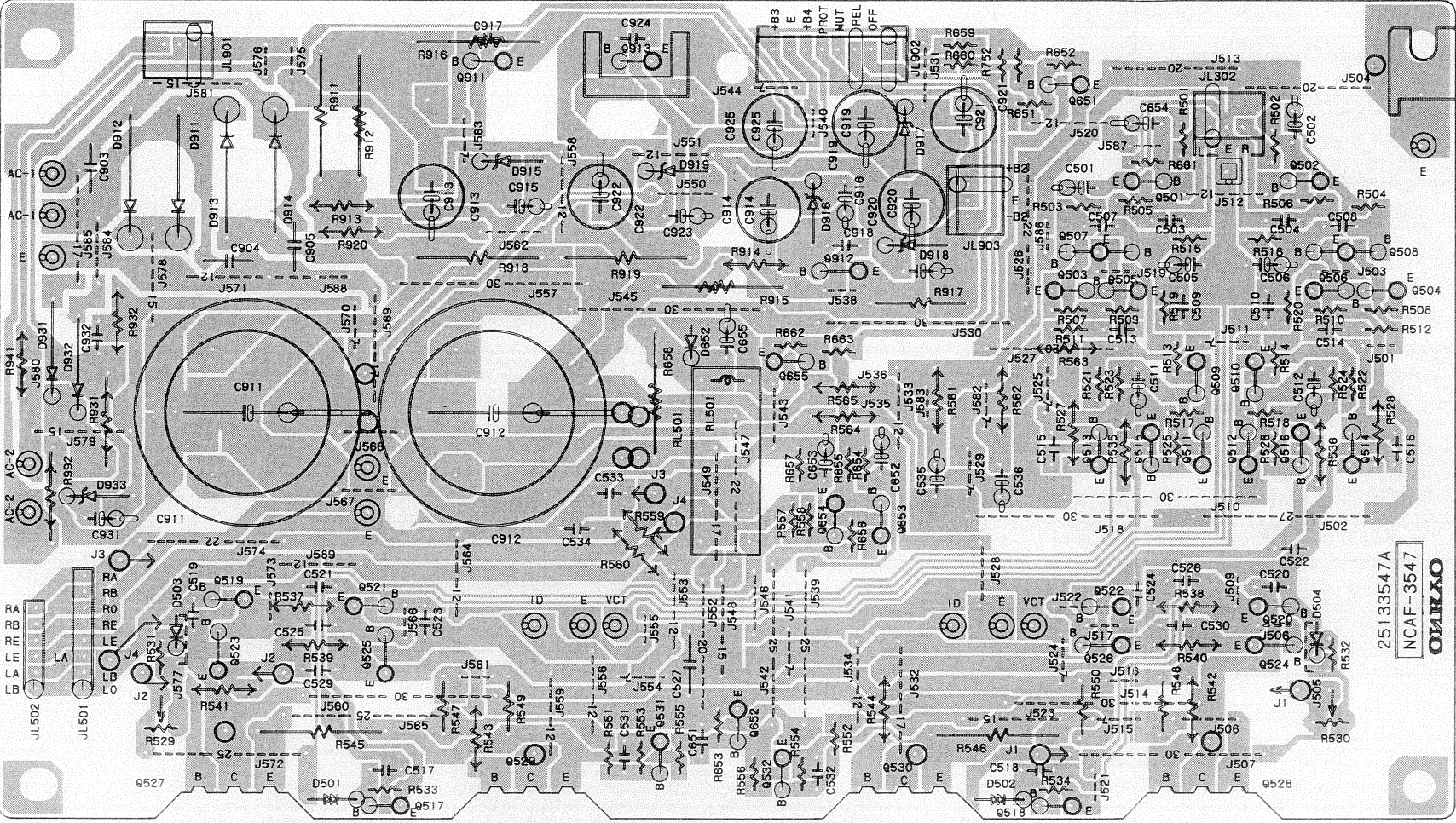


μPC4570C (OP. Amp.)
NJM4560DX
NJM4565DD

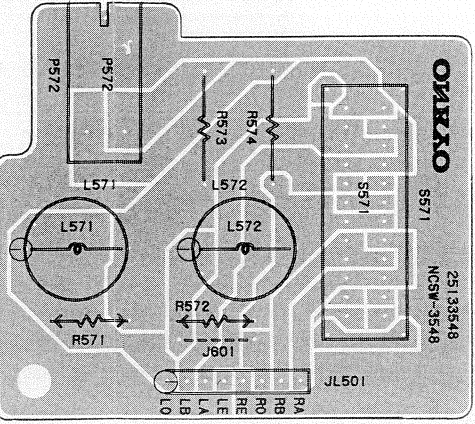


PRINTED CIRCUIT BOARD VIEW FROM BOTTOM SIDE

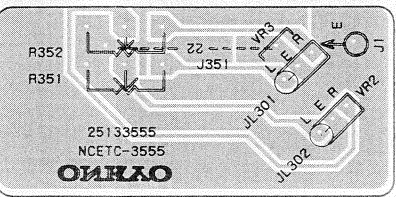
NASW-3547-1A



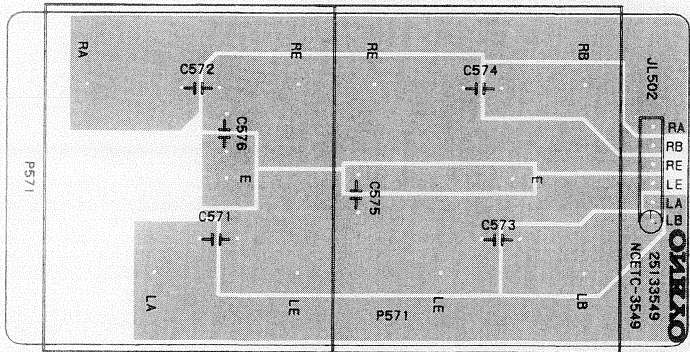
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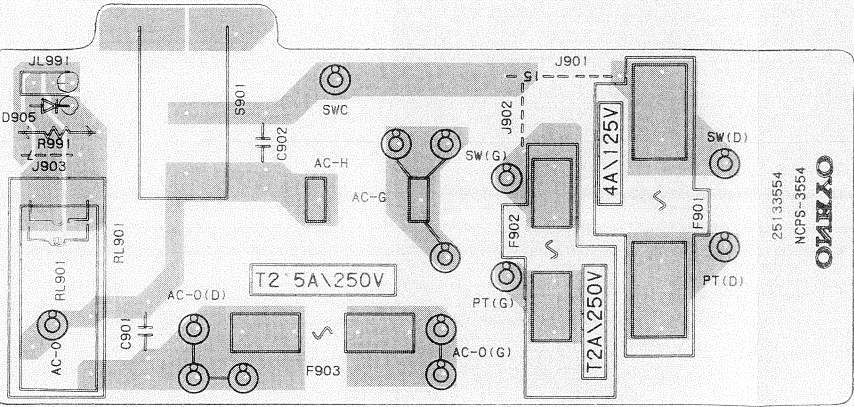
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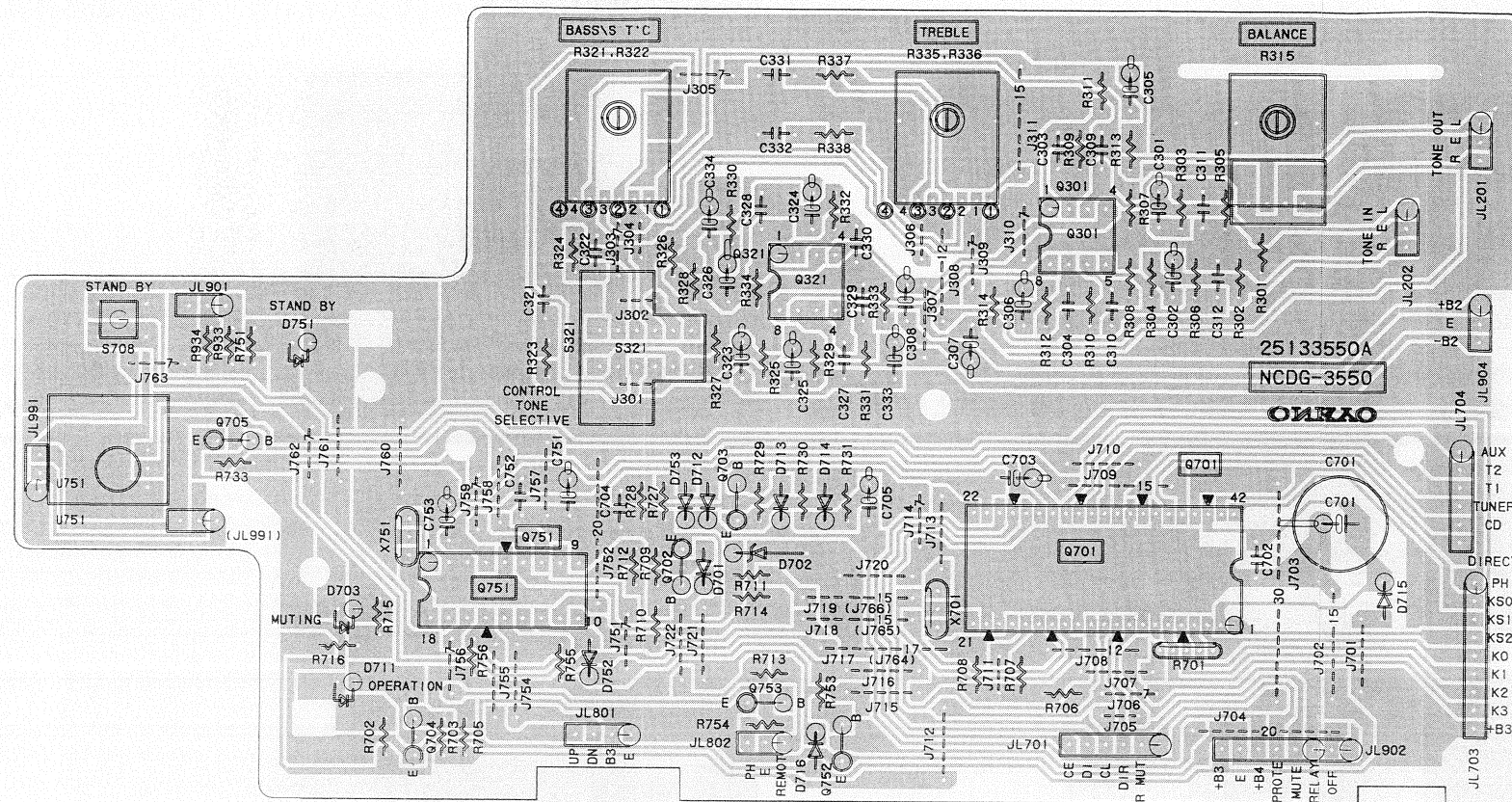
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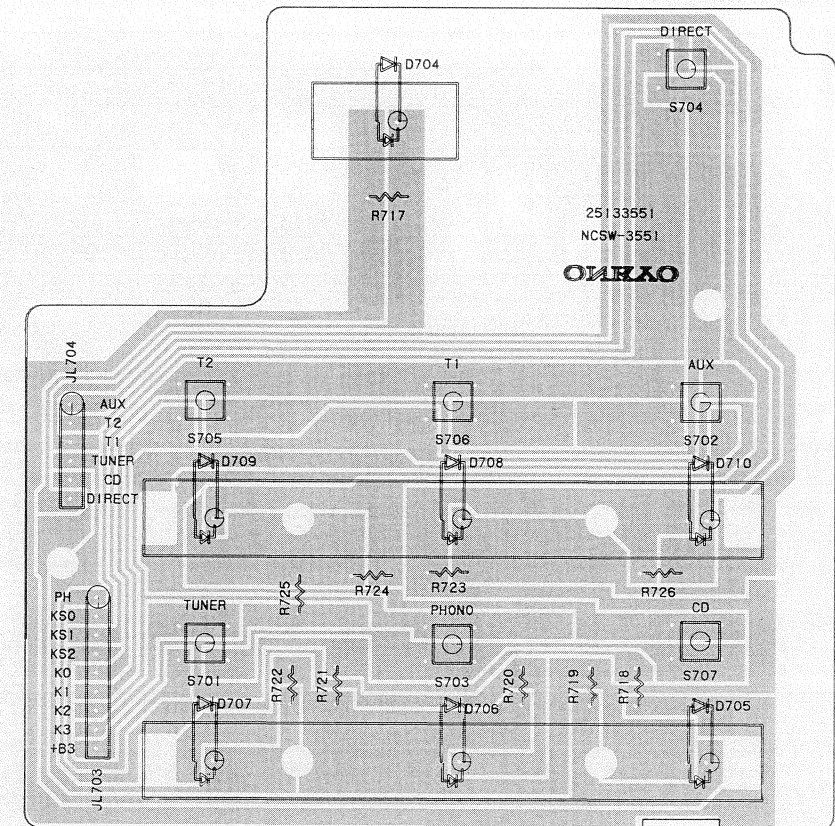
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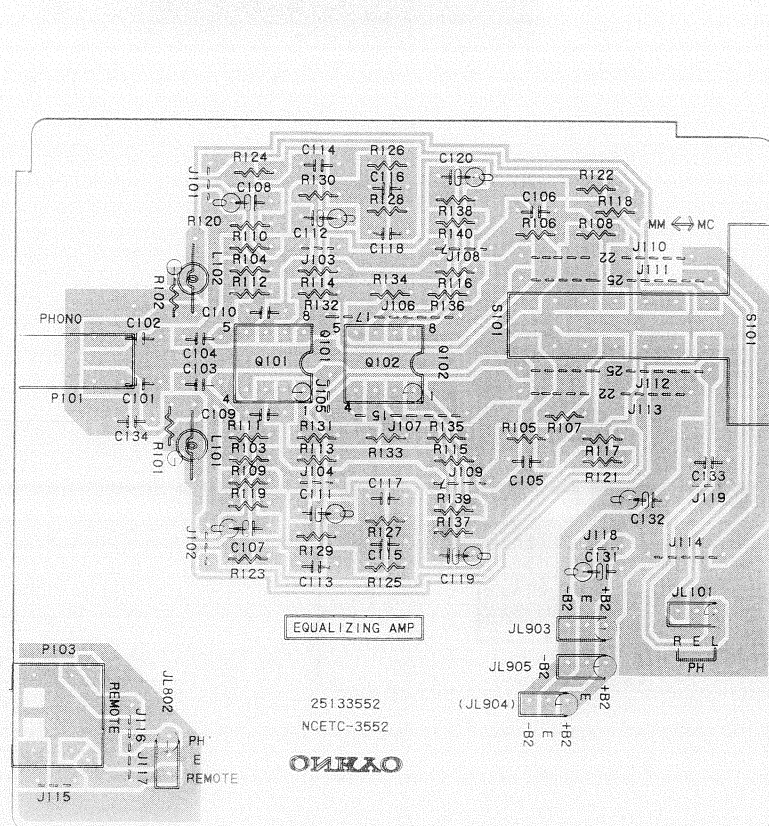
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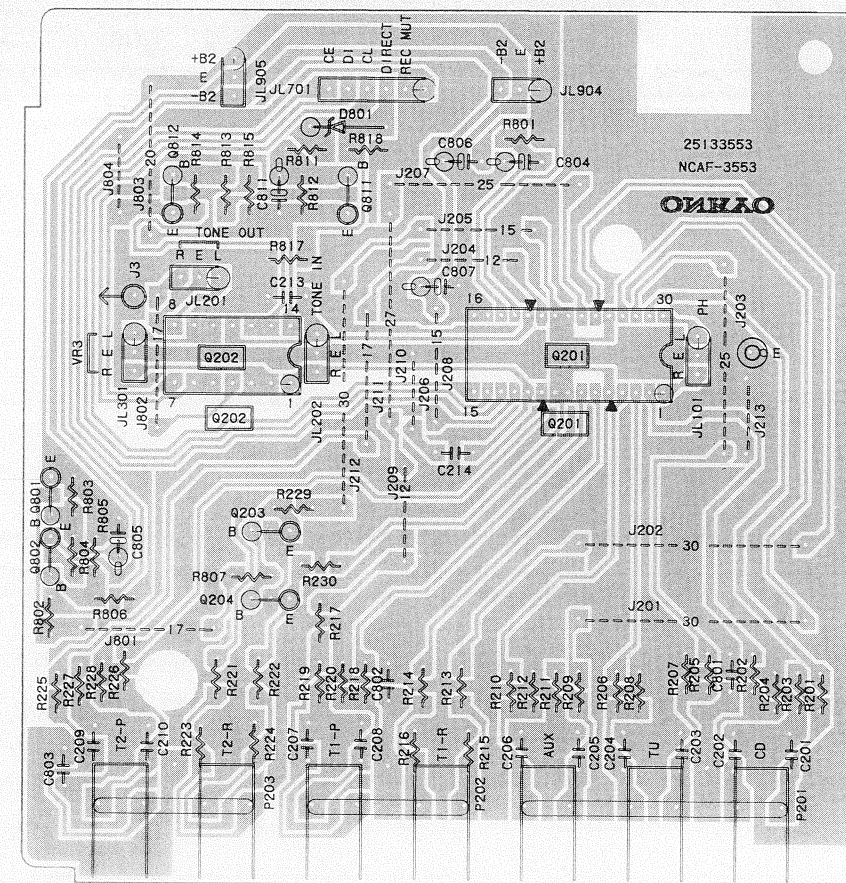
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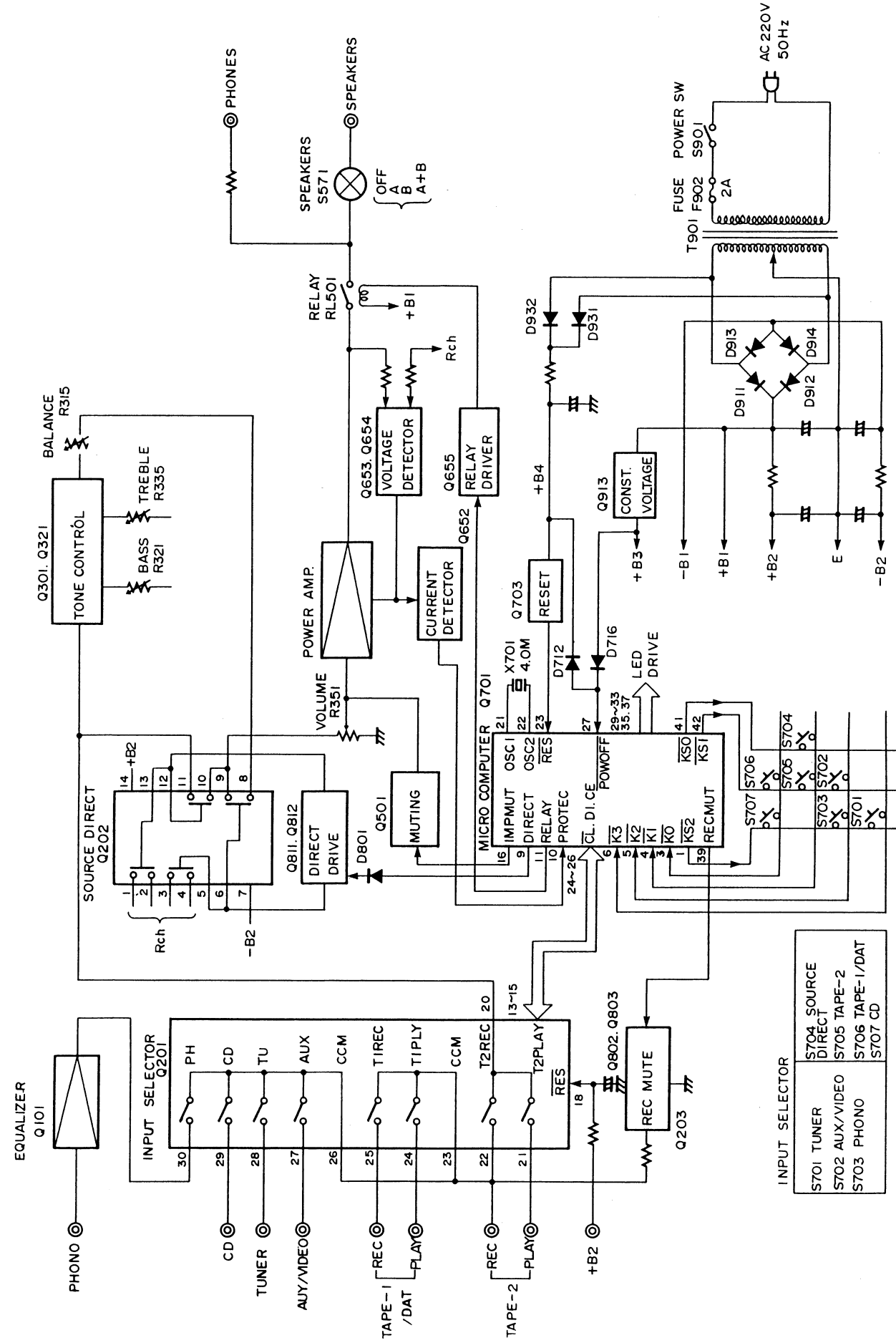
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NAAF-3553-1A



BLOCK DIAGRAM



A-8620

A-8620

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